MMX Series

VIDEO WITH AUDIO AND VGA WITH AUDIO
MINI MATRIX SWITCHERS

- ■ **150 MHz (-3dB) video bandwidth, fully loaded (composite video and S-video models)**

- ■ **300 MHz (-3dB) RGB video bandwidth, fully loaded (MMX 32 VGA A)**

- ■ **Balanced and unbalanced audio switching**

- ■ **Input audio gain and attenuation**

- ■ **Audio breakaway (composite video and S-video models only)**

- ■ **RS-232 control**

- ■ **Contact closure remote control (MMX 32 VGA A)**

- ■ **Rack-mountable**

MMX 42 AV RCA

MMX 62 SV RCA

MMX 32 VGA A

The Extron MMX Series of Video and VGA Matrix Switchers combine full-sized matrix capabilities with a compact 1U, half rack width VersaTools™ enclosure, providing economical and simple-to-use routing and switching solutions for composite video, S-video, or VGA with stereo audio (balanced/unbalanced).

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DESCRIPTION

The Extron **MMX Series** of Video and VGA Matrix Switchers are economical, compact units that are effective in small installations, such as conference rooms, classrooms, and home theatres. All models can function as either the primary switcher or as sub-switchers in a larger system. The intuitive front panels with tactile buttons and LED indicators of the MMX Series enable easy control of inputs and outputs for non-technical users. MMX matrix switchers are housed in 1U high, half rack width VersaTools™ enclosures.

**Composite Video and S-Video with Stereo Audio Switchers**
The MMX Series of composite video and S-video with stereo audio switchers come in 4x2 and 6x2 models. Key features include genlock to input one, which allows all signals to switch at the same vertical interval timing for smooth, seamless transition; front panel security lockout for environments where easy access is undesirable; quad standard compatibility with NTSC 3.58, NTSC 4.43, PAL, and SECAM signals; and RS-232 for control via a third party control system.

VGA-UXGA and Audio Matrix Switcher
The MMX 32 VGA A 3x2 VGA matrix switcher with audio allows users to easily switch between three computer-video (VGA-UXGA) and stereo audio signals using two sets of direct access buttons. Users can connect a VGA and audio cable directly from the source to the switcher. Output one is optimized for local or preview monitor, while output two is optimized for connection to the main presentation display and house sound system. The unit can be controlled through RS-232 via a third party control system and by contact closure with tally power, which allows the user to control both outputs from remote locations.
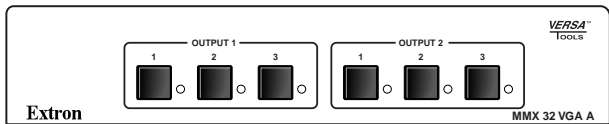
MMX 32 VGA A (Front)

MMX 32 VGA A (Back)

FEATURES (CONT.)
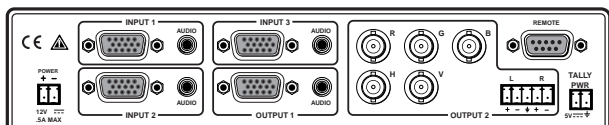
- **Captive screw or RCA audio connections** – The MMX Series AV and SVA matrix switcher models provide captive screw input and output connectors for balanced or unbalanced stereo audio signals. The RCA models feature RCA female connectors and are compatible with unbalanced audio signals only.
- **Input audio gain and attenuation (adjustable via RS-232)** – The Extron MMX 42/62 Series allows users to set the level of audio gain or attenuation (-18dB to +24dB). Individual input audio levels may be adjusted so there are no noticeable volume differences when switching between sources.
- **Audio breakaway** – The MMX Series matrix switchers provide the capability to break away an audio signal from its corresponding video signal. Audio breakaway switching can be done via the front panel or RS-232 control.
- **RS-232 control** – A rear panel RS-232 control port provides connection of the MMX Series to a third party control system.
- **Simple Instruction Set (SIS™)** – Extron SIS is a set of basic ASCII code commands that provide simple control through a third party control system. Instead of programming in long, obscure strings of code, SIS makes it easy to operate an Extron product using RS-232 control.
- **Rack-mountable** – The MMX Series Switchers are housed in 1U, half rack width rugged metal enclosures and can be rack-mounted using an optional rack shelf.
- **External international power supply** – Provides worldwide power compatibility (part # 70-055-01).
- **MMX 32 AAP and MMX 32 MAAP remote control** – The MMX 32 MAAP contains input selection buttons and LED indicators to control an MMX 32 VGA A matrix switcher. The MMX 32 MAAP is a single space Mini Architectural Adapter Plate (MAAP) that can be installed in any Extron MAAP mounting panel. The MMX 32 MAAP enables a user to remotely select an input to route to one of the matrix switcher outputs.
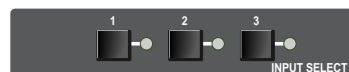
MMX 32 AAP   MMX 32 MAAP

FEATURES

- **150 MHz (-3dB) bandwidth, fully loaded** – Ensures switching and distribution of most signals without degradation. The ratings are worst case specifications, i.e., the MMX Series provide 150 MHz (-3dB) at full performance capacity — when one input signal drives all outputs.
- **300 MHz (-3dB) bandwidth, fully loaded (MMX 32 VGA A only)** – Ensures switching and distribution of most signals without degradation. The ratings are worst case specifications, i.e., the MMX 32 VGA A provides 300 MHz (-3dB) at full performance capacity — when one input signal drives all outputs.
- **Buffered I/O** – Each input and output is individually buffered to provide maximum performance with virtually no crosstalk.
- **View I/O mode (MMX 42 & MMX 62 only)** – Allows users to easily see which individual inputs and outputs are actively connected. Available from the front panel or RS-232 control.

SPECIFICATIONS

VIDEO

Routing	
MMX 32	3 x 2 matrix
MMX 42 Series	4 x 2 matrix
MMX 62 Series	6 x 2 matrix
Gain	Unity
Bandwidth	
MMX 32	300 MHz (-3dB), fully loaded
	0 – 10 MHz: no more than +0.1dB to -0.1dB
	0 – 130 MHz: no more than +2dB to -0.1dB
MMX 42/62 Series	150 MHz (-3dB), fully loaded
	0 - 10 MHz: no more than 0.1dB to -0.1dB
	0 - 30 MHz: no more than 0.5dB to -0.5dB
Phase between I/Os (42/62 Series)	<1.28˚ at 3.58 MHz
Differential phase error (42/62)	0.1˚ at 3.58 MHz and 4.43 MHz
Differential gain error (42/62)	0.1% at 3.58 MHz and 4.43 MHz
Max. propagation of delay (42/62)	5 ns typical (±1 ns)
Crosstalk	
MMX 32	-55dB @ 10 MHz, -45dB @ 30 MHz, -37dB @ 100 MHz
MMX 42/62 Series	-50dB @ 5 MHz
Switching speed	200 ns (max.)

VIDEO INPUT

Number/signal type
  MMX 32 .... 3 RGBHV, RGBS, RGsB, RsGsBs
  MMX 42 and MMX 62 video models
                                                     4 or 6 composite video
  MMX 42 and MMX 62 S-video models .. 4 or 6 S-video
Connectors
  MMX 32 .... (3) 15-pin HD female
  MMX 42 and MMX 62 video models
                                                     4 or 6 female BNC
  MMX 42 and MMX 62 S-video models
                                                     4 or 6 female 4-pin mini DIN
Nominal level .... 1V p-p for Y of S-video, and for composite video
                                                     0.7V p-p for RGB
                                                     0.3V p-p for C of S-video
Min./max. levels
  MMX 32 .... Analog: -0.5V to 2.0V p-p no offset at unity gain
  MMX 42/62 Series .... Analog: 0.5V to 2.0V p-p with no offset
Impedance .... 75 ohms
Horizontal frequency (MMX 32) .... 15 kHz to 145 kHz
Vertical frequency (MMX 32) .... 30 Hz to 170 Hz
Return loss
  MMX 32 .... <-42dB @ 5 MHz
  MMX 42/62 Series .... <-30dB @ 5 MHz
Max. DC offset
  MMX 32 .... 4.0V
  MMX 42/62 Series 1.5V

VIDEO OUTPUT

Number/signal type
  MMX 32 .... 2 analog RGBHV, RGBS, RGsB
  MMX 42 & MMX 62 video models...... 2 composite video
  MMX 42 & MMX 62 S-video models .. 2 S-video
Connectors
  MMX 32 .... (1) 15-pin HD female & (1) 5 BNC female
  MMX 42 & MMX 62 video models...... 2 female BNC
  MMX 42 & MMX 62 S-video models .... 2 female 4-pin mini DIN
Nominal level .... 1V p-p for Y of S-video, and for composite video
                                                     0.7V p-p for RGB, 0.3V p-p for C of S-video
Min./max. levels
  MMX 32 .... 0.3V to 2.0V p-p
  MMX 42/62 .... 0V to 2.0V p-p
Impedance .... 75 ohms
Return loss .... -30dB @ 5 MHz
DC offset .... ±5mV max. with input at 0 offset
Switching type .... Vertical interval

SYNC — FOR MMX 32, UNLESS OTHERWISE INDICATED

Input type .... RGBHV, RGBS, RGsB, RsGsBs
Output type .... RGBHV, RGBS, RGsB
Standards (MMX 42/62 Series).................. NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level .... 2.5V to 5.0V p-p, 4.0V p-p normal
Output level .... AGC to TTL: 4V to 5V p-p, unterminated
Input impedance .... 10 k ohms
Output impedance .... 75 ohms
Max input voltage .... 5V p-p
Max. propagation delay .... 30 ns
Max. rise/fall time...................................... 4.2 ns
Polarity .... RGBHV: when RGBHV is input, polarity follows
                                                     input; otherwise negative
                                                     RGBs, RGsB: negative

AUDIO

Routing
  MMX 32 .... 3 x 2 stereo matrix
  MMX 42 Series .... 4 x 2 stereo matrix
  MMX 62 Series .... 6 x 2 stereo matrix
Gain — MMX 32
  Program output .... Unbal. output: 0dB; bal. output: +6dB
  Local output .... Unbal. output: 0dB
Gain — MMX 42/62 Series
  Captive screw models .... Unbal. output: -6dB; bal. output: 0dB
  RCA connector models .... Unbal. output: 0dB
Frequency response .... 20 Hz to 20 kHz, ±0.05dB
THD + Noise
  MMX 32 .... 0.03% @ 1 kHz, 0.3% @ 20kHz nominal level
  MMX 42/62 Series .... 0.03% @ 1 kHz at rated nominal level
S/N.. >90dB, at rated max. output
Crosstalk... <-80dB @ 1 kHz, fully loaded
Stereo channel separation .... >90dB @ 1 kHz
CMRR... >75dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type
  MMX 32 .... 3 stereo, PC level, unbal.
  Captive screw models .... 4 or 6 stereo, bal./unbal.
  RCA connector models .... 4 or 6 stereo, unbal.
Connectors
  MMX 32 .... (3) 3.5 mm mini stereo jacks
  Captive screw models .... (4 or 6) 3.5 mm captive screw connectors, 5 pole
  RCA connector models .... 4 or 6 pairs of female RCA connectors
Impedance
  MMX 32 .... 25 kohms bal./unbal., DC coupled
  MMX 42/62 Series .... >10 kohms unbal./bal., DC coupled
Nominal level .... -10dBV (316mV)
Max. level
  MMX 32 .... +8.5dBu, (unbal.) at 1%THD+N
  MMX 42/62 Series .... +19.5dBu, (bal. or unbal.) at 1%THD+N
Input gain adjustment .... –18dB to +24dB, adjustable per input via RS-232 only

AUDIO OUTPUT

Number/signal type
  Captive screw models .... 2 stereo, bal./unbal.
  RCA connector models .... 2 stereo, unbal.
Connectors
  MMX 32 .... (1) 3.5 mm mini stereo audio jack (unbal.)
                                                     (1) 3.5 mm captive screw connector, 5 pole
  Captive screw models   (2) 3.5 mm captive screw connectors, 5 pole
  RCA connector models .... 2 pairs of female RCA connectors
Impedance .... 50 ohms unbal., 100 ohms bal.
Gain error.. ±0.1dB channel to channel
Max. level (Hi-Z)....................................... >+21dBu, bal. or unbal. at stated %THD+N
Max. level (600 ohm)
  MMX 32 program audio: >+14dBm, bal. or unbal. at stated %THD+N
  MMX 42/62 models: >+15dBm, bal. or unbal. at stated %THD+N
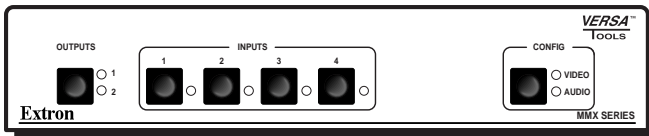**NOTE:** 0dBu = 0.775 volts (RMS).

CONTROL/REMOTE — SWITCHER

Serial control port
  MMX 32 .... RS-232, 9-pin female D connector
  MMX 42/62 Series .... RS-232, female 3.5 mm captive screw, 3-pole
Baud rate and protocol.............................. 9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations
  MMX 32 .... 2 = TX, 3 = RX, 5 = GND
  MMX 42/62 Series .... 1 = TX, 2 = RX, 3 = GND
Contact closure (MMX 32 only) .... 9-pin female D connector
                                                     Output 1: 1= input 1, 4 = input 2, 6 = input 3, 5=GND
                                                     Output2 : 7= input 1, 8 = input 2, 9 = input 3, 5=GND
Program control .... Extron's control program for Windows®
                                                     Extron's Simple Instruction Set™ – SIS™

GENERAL

Power.. 100VAC to 240VAC, 50/60 Hz, external,
                                                     autoswitchable; to 12VDC, 1 A power supply.
  MMX 32 .... 15 watts, product requires 0.7 A.
  MMX 42/62 Series .... 6 watts, product requires 0.5 A.
Rack mount .... Yes, with optional rack shelf, part #60-190-01 or
                                                     #60-190-20; also furniture mountable with optional
                                                     under-desk mounting kit #70-212-01
Enclosure type .... Metal
Enclosure dimensions .... 1.75" H x 8.75" W x 3.0" D (1U high, half rack
                                                     width) 4.4 cm H x 22.2 cm W x 7.6 cm D
                                                     (Depth excludes connectors.)
Product weight
  MMX 32 .... 2.5 lbs (1.1 kg)
  MMX 42/62 Series .... 4.0 lbs (1.8 kg)
Shipping weight.. 5 lbs (2.3 kg)
Listings .... UL, CUL
Compliances.. CE, FCC Class A , VCCI, AS/NZS, ICES

Model	Part Numbers	Model	Part Numbers
Composite Video and Stereo		**VGA-UXGA and Audio Switcher**	
Audio Switchers		MMX 32 VGA A......................	60-565-01
MMX 42 AV	60-556-21		
MMX 42 AV RCA	60-556-31	**MMX Remote Control Options**	
MMX 62 AV	60-557-21	MMX 32 AAP (gray)	70-277-01
MMX 62 AV RCA	60-557-31	MMX 32 AAP (black)	70-277-11
		MMX 32 AAP (White)	70-277-21
S-Video and Stereo Audio Switchers			
MMX 42 SVA	60-556-22	MMX 32 MAAP (Black)	70-277-12
MMX 42 SVA RCA..............	60-556-32	MMX 32 MAAP (white)	70-277-22
MMX 62 SVA	60-557-22		
MMX 62 SVA RCA..............	60-557-32		

Specifications are subject to change without notice.

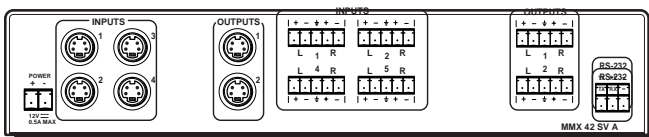im Vertrieb von   CAMBOARD Electronics
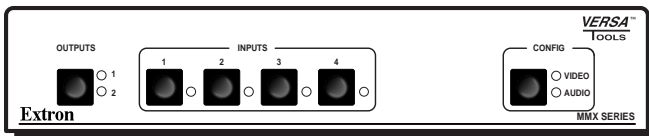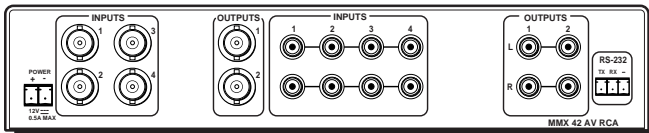
PANEL DRAWINGS

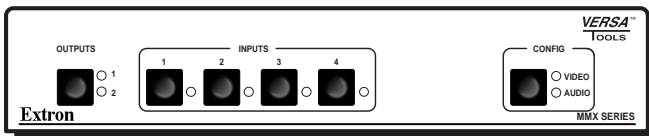MMX 42 Front

MMX 42 Back
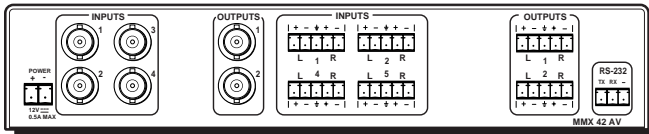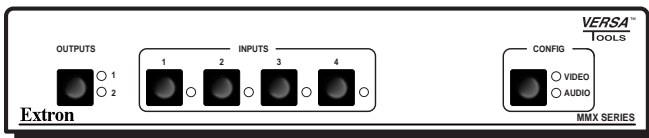
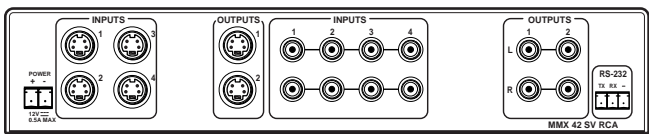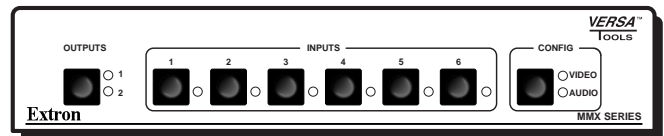MMX 42 SV A Front

MMX 42 SV A Back
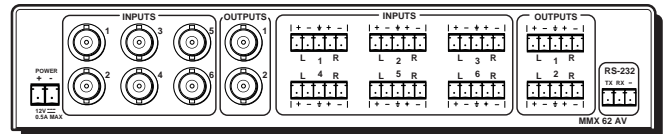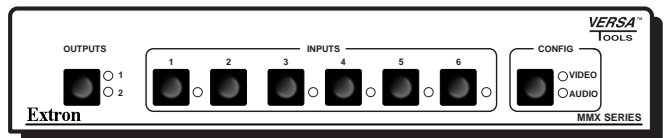
MMX 42 AV RCA Front

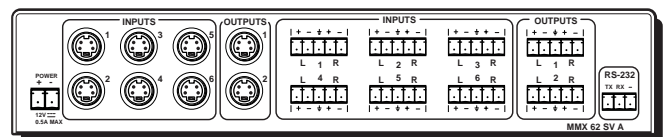MMX 42 AV RCA Back

MMX 42 SV RCA Front
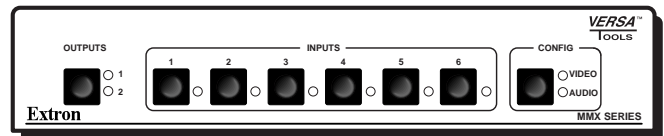
MMX 42 SV RCA Back

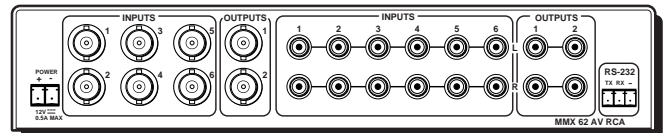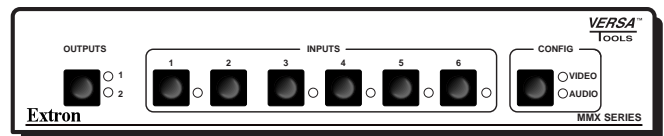MMX 62 AV Front

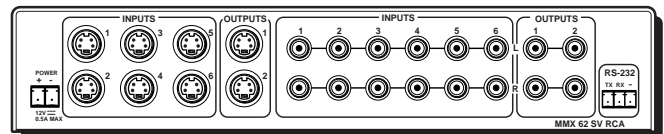MMX 62 AV Back

MMX 62 SV A Front

MMX 62 SV A Back

MMX 62 AV RCA Front

MMX 62 AV RCA Back

MMX 62 SV RCA Front

MMX 62 SV RCA Back

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